

Basic environmental testing procedures —

Part 2.1: Tests —

Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)

(This Part should be read in conjunction with Part 1.1 General)

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National foreword

This revision of BS 2011-2.1Db:1977 has been prepared under the direction of the General Electrotechnical Engineering Standards Committee. It is identical with IEC Publication 68-2-30:1980 “*Basic environmental testing procedures — Part 2: Tests — Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)*” including Amendment No. 1 (1985), published by the International Electrotechnical Commission (IEC), and like all other Parts of IEC Publication 68 it is subject to CENELEC Harmonization Document (HD) 323.

This standard has been prepared as a result of international discussions in which the UK took an active part.

This standard supersedes BS 2011-2.1Db:1977, which is therefore withdrawn.

Terminology and conventions. The text of the international standard has been approved as suitable for publication as a British Standard, without deviation. Some terminology and certain conventions are not identical with those used in British Standards.

Wherever page numbers are quoted in connection with references to figures, they are IEC page numbers.

Cross-references

International standard	Corresponding British Standard
IEC 68-2-4:1960	BS 2011 <i>Basic environmental testing procedures</i>
Part 2 Tests: Test D ^a	Part 2.1Da:1977 <i>Test Da. Accelerated damp heat</i> (Identical)
IEC 68-1:1978	BS 2011 <i>Basic environmental testing procedures</i> Part 1.1:1980 <i>General</i> (Identical)
IEC 68-2-28:1980	BS 2011 <i>Basic environmental testing procedures</i> Part 2.2C & D:1981 <i>Tests C & D. Guidance for damp heat tests</i> (Identical)

^a This test is to be withdrawn on 1 January 1983.

Additional information. All Parts of BS 2011 are listed in BSI Sectional List 26 (SL 26), which is usually revised annually.

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Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Introduction

It is recommended that Test Db should be used instead of Test D of IEC Publication 68-2-4 (Test D: Accelerated Damp Heat) for testing all newly designed articles¹⁾.

1 Object

To determine the suitability of components, equipment or other articles for use and storage under conditions of high humidity when combined with cyclic temperature changes and, in general, producing condensation on the surface of the specimen.

2 General description

This test comprises one or more temperature cycles in which the relative humidity is maintained at a high level.

Two variants of the cycle are given which are identical except for the temperature fall period; during this part of the cycle, variant 2 allows wider tolerances of relative humidity and the rate of temperature fall.

The test severity is determined by the upper temperature of the cycle and the number of cycles (see Clause 4).

Test profiles illustrating the procedure are shown in Figure 1, Figure 2a, Figure 2b and Figure 3, pages 4, 5, 6 and 7.

3 Testing chamber

The chamber shall be so constructed that the conditions given hereafter may be obtained:

3.1 The temperature can be varied cyclically between $25 \pm 3^\circ\text{C}$ and the appropriate upper temperature specified with the tolerance and rate of change specified in Sub-clause 6.3 and Figure 2a or Figure 2b, as applicable.

3.2 The relative humidity in the working space can be maintained within the limits given in Sub-clause 6.3 and Figure 2a or Figure 2b, as applicable.

3.3 Care shall be taken to ensure that the conditions prevailing at any point in the working space are uniform and are as similar as possible to those prevailing in the immediate vicinity of suitably located temperature and humidity sensing devices. The air in the chamber should therefore be continuously stirred at a rate necessary to maintain the specified conditions of temperature and humidity.

3.4 The specimens under test shall not be subjected to radiant heat from the chamber conditioning processes.

3.5 Water used for the maintenance of chamber humidity shall have a resistivity of not less than $500\ \Omega\text{m}$.

Condensed water shall be continuously drained from the chamber and not used again until it has been re-purified.

Precautions shall be taken to ensure that no condensed water is allowed to fall on the specimens.

3.6 The dimensions, properties and/or electrical loading of the specimens under test shall not appreciably influence conditions within the chamber.

4 Severities

4.1 The severity of the test is defined by the combination of the upper temperature and the number of cycles.

4.2 The severity shall be chosen from the following:

- a) upper temperature: 40°C ,
number of cycles: 2, 6, 12, 21, 56;
- b) upper temperature: 55°C ,
number of cycles: 1, 2, 6.

5 Initial measurements

The specimens shall be visually inspected and electrically and mechanically checked, as required by the relevant specification.

6 Conditioning

6.1 The specimens shall be introduced into the chamber either in the unpacked, switched-off, ready-for-use state, or as otherwise specified in the relevant specification.

Where no specific mounting is prescribed, the thermal conduction of the mounting shall be low, so that for all practical purposes the specimen is thermally isolated.

¹⁾ At the Paris meeting (1979) of IEC Sub-committee 50B. It was decided to withdraw Test D by 1st January 1983.